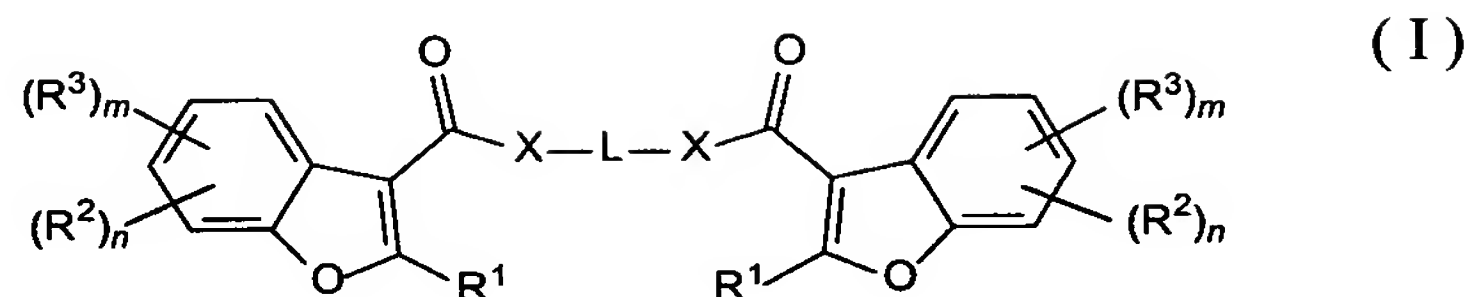## CLAIMS

What is claimed is:

1.   A compound of the formula I

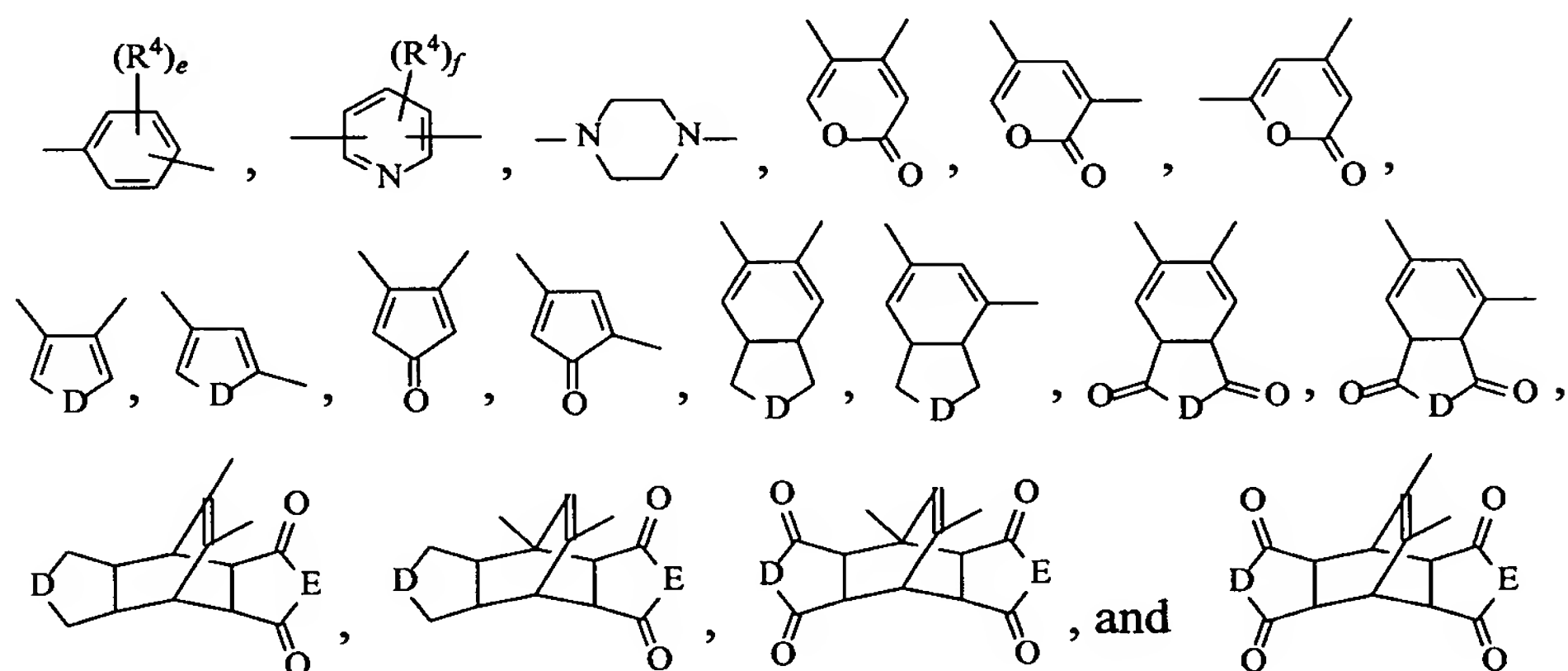(I)

wherein

L is selected from $-(CH_2)_a-$, and a group of the formula

$$-B-A-B-$$

wherein a is selected from 2-20,

B is $-(CH_2)_b-$, $-(CH_2)_c-O-(CH_2)_d-$, or

, and

A is selected from a group of the formula

$$-O-,\ -CH=CH-,\ -C\equiv C-C\equiv C- ,$$

wherein R^4 is selected from halogen, lower alkyl, lower alkoxy, NO_2, and -NRR,

D and E are independently selected from O, S, Se, CRR and NR,

b is selected from 1-10,

c is selected from 1-8,

d is selected from 1-8,

e is selected from 0-4;

f is selected from 0-3, and

R is selected from H, lower alkyl, aralkyl and aryl;

42

X is selected from O, or -NH-;

R^1 is selected from

    a C_1-C_{20} alkyl which may be unsubstituted or substituted with one or

        more substituents selected from CN, halogen, lower alkoxy, thio-lower alkyl, nitro,

        phosphinos, phosphates, and protected amino;

    a C_1-C_{20} alkenyl which may be unsubstituted or substituted with one or more substituents

        selected from CN, halogen, lower alkoxy, thio-lower alkyl, nitro, phosphinos,

        phosphates, and protected amino;

    an aromatic group which may be unsubstituted or substituted with one or more

    substituents

        selected from halogen, lower alkyl, lower alkoxy, thio-lower alkyl, nitro, phosphinos,

        phosphates, and protected amino; and

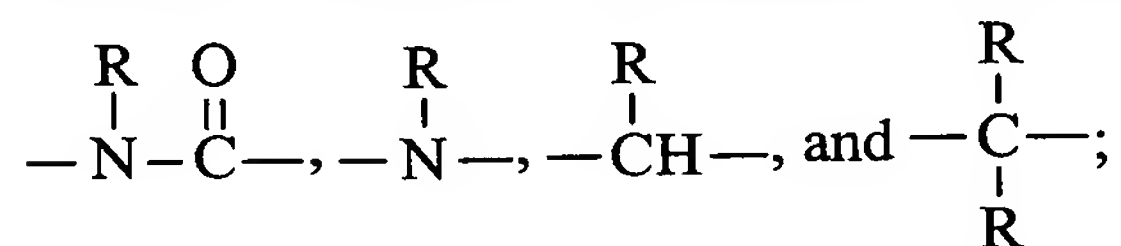   an aralkyl which may be unsubstituted or substituted with one or more substituents

    selected

        from halogen, lower alkyl, lower alkoxy, thio-lower alkyl, nitro, phosphinos,

        phosphates, and protected amino;

R^2 is selected from halogen, hydroxy, CN, nitro, lower alkyl, lower alkoxy, thio-lower alkyl,

    lower alkenyl, cycloalkyl, C_2-C_8 acyl, lower alkyl ester, and lower alkyl amide;

R^3 is a group of the formula

$$-(CH_2)_p\text{-}Y_q\text{-}(CH_2)_r\text{-}Z_s\text{-}(CH_2)_t\text{-}R^5$$
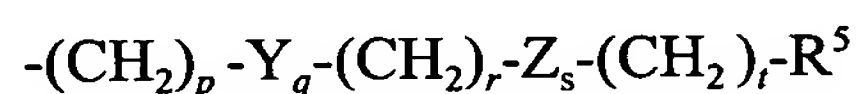
wherein Y and Z are independently selected from O, S, $-OCH_2CH_2O-$, $-\overset{\overset{\text{O}}{\|}}{C}-$, $-\overset{\overset{\text{O}}{\|}}{C}-O-$,

$-\overset{\overset{\text{R}}{|}}{N}-\overset{\overset{\text{O}}{\|}}{C}-$, $-\overset{\overset{\text{R}}{|}}{N}-$, $-\overset{\overset{\text{R}}{|}}{C}H-$, and $-\overset{\overset{\text{R}}{|}}{\underset{\underset{\text{R}}{|}}{C}}-$;

p, r and t are independently selected from values from 0 to 10;

q and s are independently selected from 0 and 1, provided that when $t=0$ then $s=0$, and

when $r=0$ then $q=0$; and

R^5 is selected from OH, CO_2H, $-NH\overset{\overset{\text{O}}{\|}}{C}OH$, and $-NH\overset{\overset{\text{O}}{\|}}{C}-CH_2OH$;
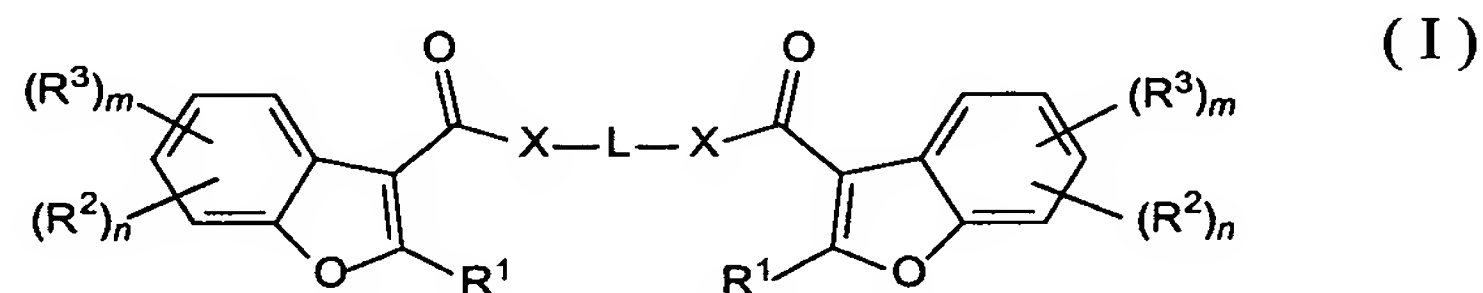
43

n is selected from 0-4; and ↵

m is 0 or 1, with the proviso that the sum of *n* plus *m* does not exceed 4.

5   2.   A compound of the claim 1, wherein A is selected from a group of the formula
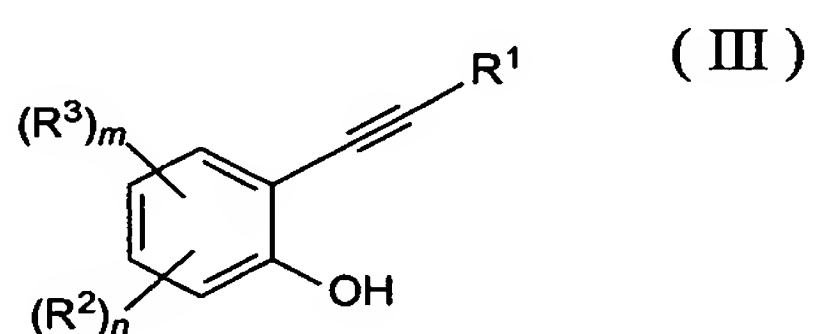
-O-, -CH=CH-, and $-C\equiv C-C\equiv C-$.

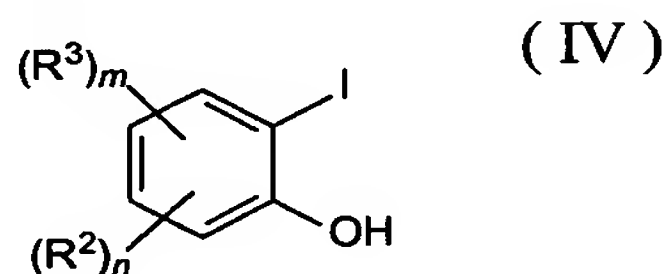3.   A process for the preparation of a compound of the formula I
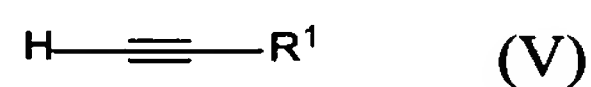
10

(I)

comprising the steps of

(a) a Sonogashira reaction to prepare a compound of the formula III

(III)

15   by reacting a compound of the formula IV
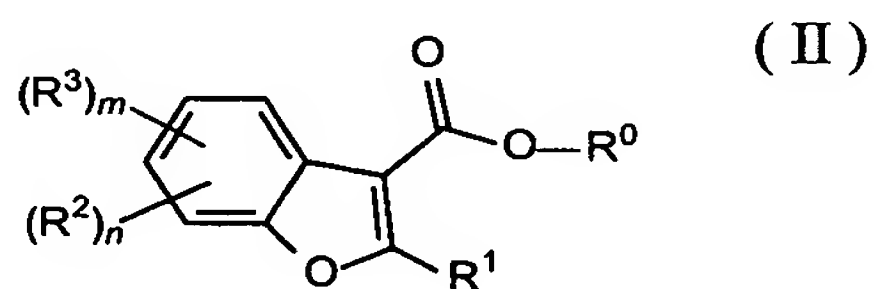

(IV)

with a terminal alkyne represented by the formula V:

(V)

20   in the presence of base and a transition metal catalyst;

(b) carbonylative annulation to give a compound of the formula II

(II)

44

by treating a compound of the formula III with an alcohol of the formula R^0-OH in the presence of a transition metal catalyst, carbon monoxide and a base, wherein R^0 is lower alkyl, aralkyl, or aryl, wherein the lower alkyl, aralkyl, or aryl, may be optionally substituted with one or more halogen, CN and nitro, or R^0 is selected from a group of the formula

-L-OH, and -B-A',

wherein L and B are as described above for a compound of the formula I, and A' is -CH=CH$_2$ or $-C\equiv CH$; and

(c) coupling two molecules of the formula II to give a compound of the formula I,

wherein R^1, R^2, R^3, X, L, n and m are as described in claim 1 for the compound of the formula I.